ENHANCING MENTAL COMPUTATION IN YEAR 3

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The purpose of the study was to develop and investigate the effectiveness of an instructional program to enhance mental computation strategies (addition and subtraction) in a class of Year 3 students (approximately 8 years of age). The short instructional program made use of two models (100 board and empty number line) to support students' development of mental strategies. The students were encouraged to formulate and discuss mental computation strategies. Pre-instruction and post-instruction interviews were conducted to monitor students' progress. The interview items consisted of one-, two-, and three-digit addition and subtraction examples (1-digit items would be considered number fact items for Year 3 students).

At present, in Queensland, Year 3 students are taught written algorithms to solve 2-digit (with and without regrouping) and 3-digit (without regrouping) addition and subtraction examples. Mental computation of multidigit calculations does not feature; however, it will feature in a new syllabus that will be mandated in 2007 (QSA, 2003).

The students in this study had been introduced to the written algorithms for 2-digit addition and subtraction, with regrouping, and 3-digit addition and subtraction without regrouping. They were at varying levels of proficiency with the written algorithms, and they had not been taught any mental computation strategies.

In comparing the pre- and post-interview results, it became clear that most students had developed higher level mental strategies than they possessed before the program (see Reys, Reys, Nohda, & Emori, 1995 for explanation of mental computation strategies). In the short oral presentation, these strategic methods that the students developed will be discussed.

References:

Queensland Studies Authority. (2003). *Mathematics Years 1 to 10 Syllabus. Draft July 2003.* Retrieved December 6, 2003, from http://www.qsa.qld.edu.au/yrs1_10/kla/mathematics/files/draft.pdf

Reys, R. E., Reys, B. J., Nohda, N., & Emori, H. (1995). Mental computation performance and strategy use of Japanese students in grades 2, 4, 6, and 8. *Journal for Research in Mathematics Education, 26*(4), 304-326.